

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1 (Original): A variable optical element comprising: a reference medium; a first area with a piezo-electric medium layer having a piezo-electric effect; and a second area without said piezo-electric medium layer, the first and second areas being formed on the top surface of the reference medium, wherein optical changes are imparted on the wave front of light made incident onto said first and said second areas to reflect the light based on changes in optical characteristics of said first and said second areas caused by the piezo-electric effect of said piezo-electric medium layer.

Claim 2 (Original): A variable optical element according to Claim 1, wherein a plurality of pairs of said first and said second areas are formed one after another in a cyclic manner.

Claim 3 (Original): A variable optical element according to Claim 2, wherein said piezo-electric medium layer changes in the thickness as a result of said piezo-electric effect corresponding to voltages externally applied, and wherein diffraction efficiency is changed for the light made incident on said first and said second areas based on phase changes in said first and said second areas due to said changes in thickness.

Claim 4 (Original): A variable optical element according to Claim 1, wherein said piezo-electric medium layer changes in the thickness as a result of said piezo-electric effect

corresponding to voltages externally applied, and wherein diffraction efficiency is changed for the light made incident on said first and said second areas based on phase changes in said first and said second areas due to said changes in thickness.

Claim 5 (Original): A variable optical element comprising a piezo-electric medium layer with a piezo-electric effect having at least a first area and a second area that are different in thickness, wherein optical changes are imparted to the wave front of light made incident on at least said first and said second areas to reflect the light based on changes in optical characteristics which are caused by the piezo-electric effect of the piezo-electric medium layer of at least said first and said second areas.

Claim 6 (Original): A variable optical element according to Claim 5, wherein a plurality of pairs of said first and said second areas are formed one after another in a cyclic manner.

Claim 7 (Original): A variable optical element according to Claim 6, wherein said piezo-electric medium layer changes in the thickness as a result of said piezo-electric effect corresponding to voltages externally applied, and wherein diffraction efficiency is changed for the light made incident on said first and said second areas based on phase changes in said first and said second areas due to said changes in thickness.

Claim 8 (Original): A variable optical element according to Claim 5, wherein said piezo-electric medium layer changes in the thickness as a result of said piezo-electric effect

corresponding to voltages externally applied, and wherein diffraction efficiency is changed for the light made incident on said first and said second areas based on phase changes in said first and said second areas due to said changes in thickness.

Claims 9-16 (Cancelled).

Claim 17 (New): A variable optical element according to Claim 1, further comprising, within the first area, at least one pair of an additional piezo-electric medium layer and an electrode layer formed on the piezo-electric medium layer so as to apply voltages to the piezo-electric medium layer and the additional piezo-electric medium layer.

Claim 18 (New): A variable optical element according to Claim 1, further comprising a transparent media with which the first and second areas are covered over.

Claim 19 (New): A variable optical element according to Claim 1, wherein a plurality of pairs of the first and second areas are formed one after another so as to have a structure so that bent line-shaped grooves following a wave front to be given to diffracted light and convexities are implemented one by one in a cyclic manner.

Claim 20 (New): A variable optical element according to Claim 1, further comprising dielectric reflector layers are provided on the first and second areas respectively.

Claim 21 (New): A variable optical element according to Claim 5, wherein a plurality of pairs of the first and second areas are formed one after another so as to have a structure so that bent line-shaped grooves following a wave front to be given to diffracted light and convexities are implemented one by one in a cyclic manner.

Claim 22 (New): A variable optical element according to Claim 5, further comprising dielectric reflector layers are provided on the first and second areas respectively.